Implementing the Global Enterprise - The Joint View of the Future

hosted by

AFCEA San Diego & SPAWAR Systems Center San Diego

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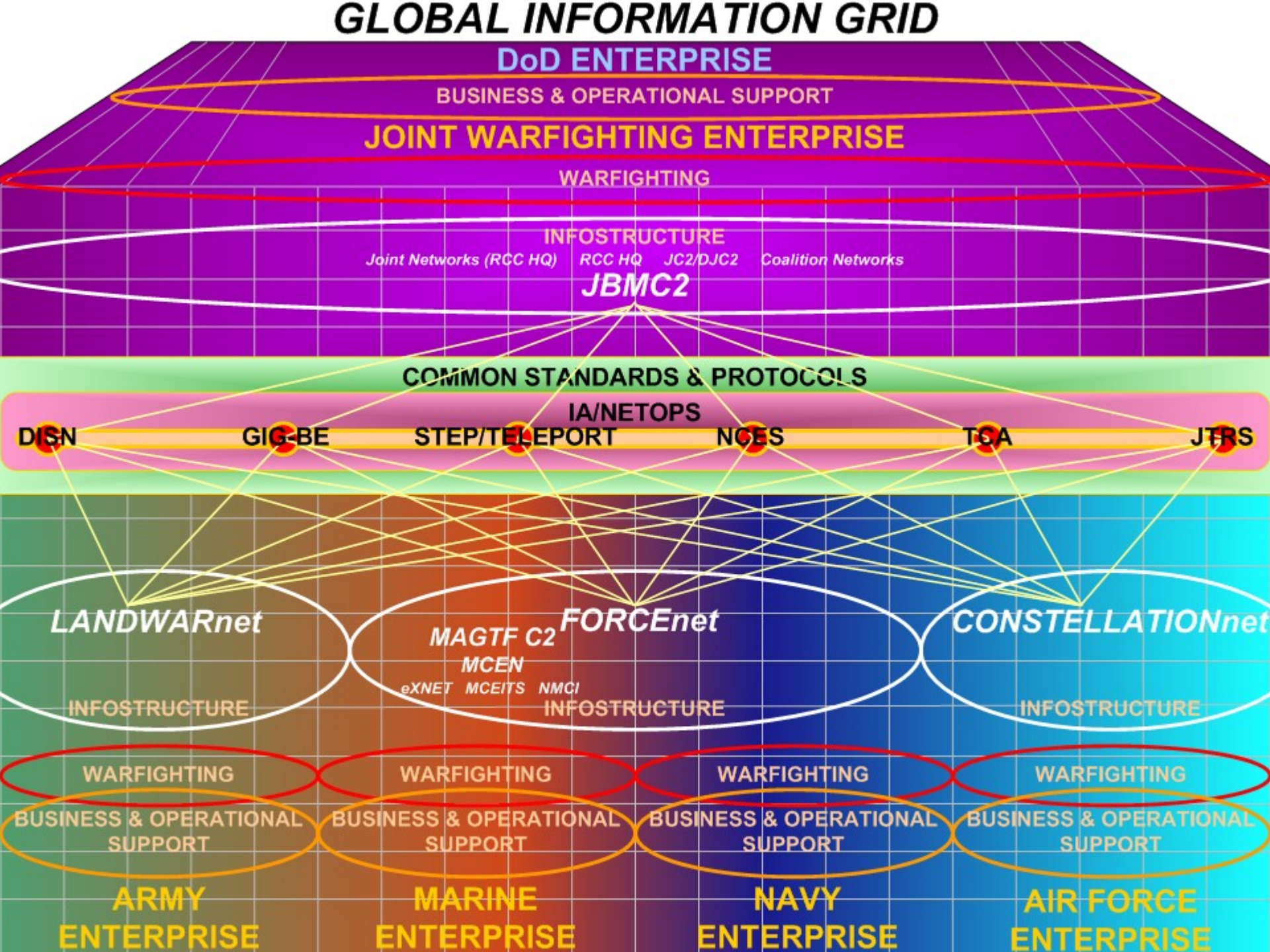
Marine Corps Systems Command

26 April 2005


GLOBAL INFORMATION GRID
DoD ENTERPRISE
BUSINESS & OPERATIONAL SUPPORT
JOINT WARFIGHTING ENTERPRISE
WARFIGHTING
INFOSTRUCTURE
Joint Networks (RCC HQ)
RCC HQ
JC2/DJC2
Coalition Networks
JBMC2
COMMON STANDARDS & PROTOCOLS
IA/NETOPS
DISN
GIG-BE
STEP/TELEPORT
NCES
TCA
JTRS
LANDWARnet
INFOSTRUCTURE
MAGTF C2
MCEN
eXNET
MCEITS
NMCI
FORCEnet
INFOSTRUCTURE
CONSTELLATIONnet
INFOSTRUCTURE
WARFIGHTING
WARFIGHTING
WARFIGHTING
WARFIGHTING
BUSINESS & OPERATIONAL SUPPORT
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BUSINESS & OPERATIONAL SUPPORT
ARMY ENTERPRISE
MARINE ENTERPRISE
NAVY ENTERPRISE
AIR FORCE ENTERPRISE

Introduction

- The Marine Corps has a vision and strategy for information technology as part of the Global Information Grid and FORCEnet.
  - Expeditionary by Culture
  - Transformational by Design

Initiatives at MARCORSYSCOM

MID 912 has caused all the services to put more emphasis on Joint/Allied interoperability

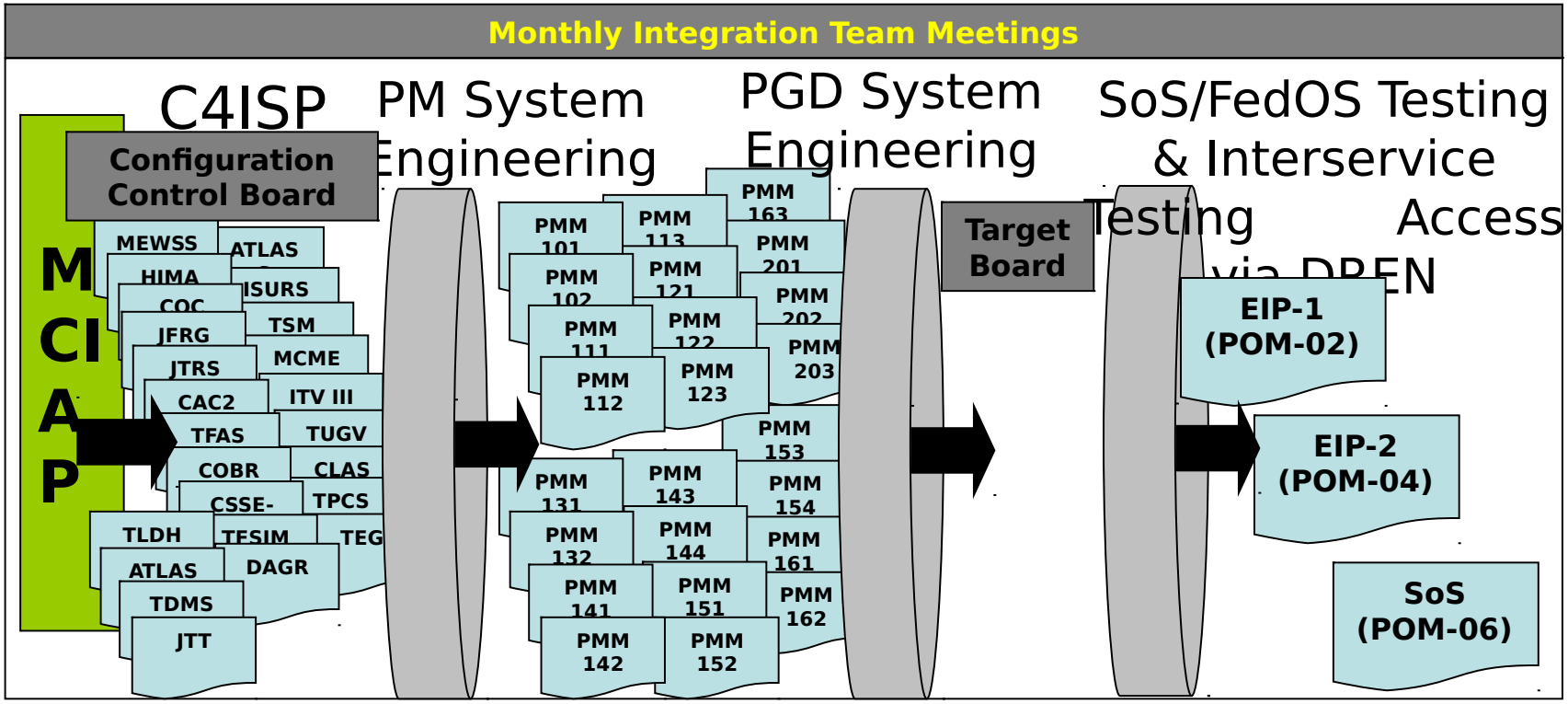
- Army / Marine Corps Board
  - MOA with PEO C3T on Ground C2 Systems
- Joint PEO Interchange
- JBMC2 Roadmap
- Participating with the Navy on FORCEnet
- MCSC has detachment located at JFCOM to help with this Joint integration

Initiatives (cont)

- Negotiating w/Army on MOA for integration with FCS
  - USMC liaison officers at FCS LSI facility and CECOM
  - Army liaison officer in MEFFV PMO at MCSC
- Army MBCOTM PO to join MCSC Comm, Intel & Networking PMO
- DJC2 PM is a Marine 0-6 who coordinates well with MCSC

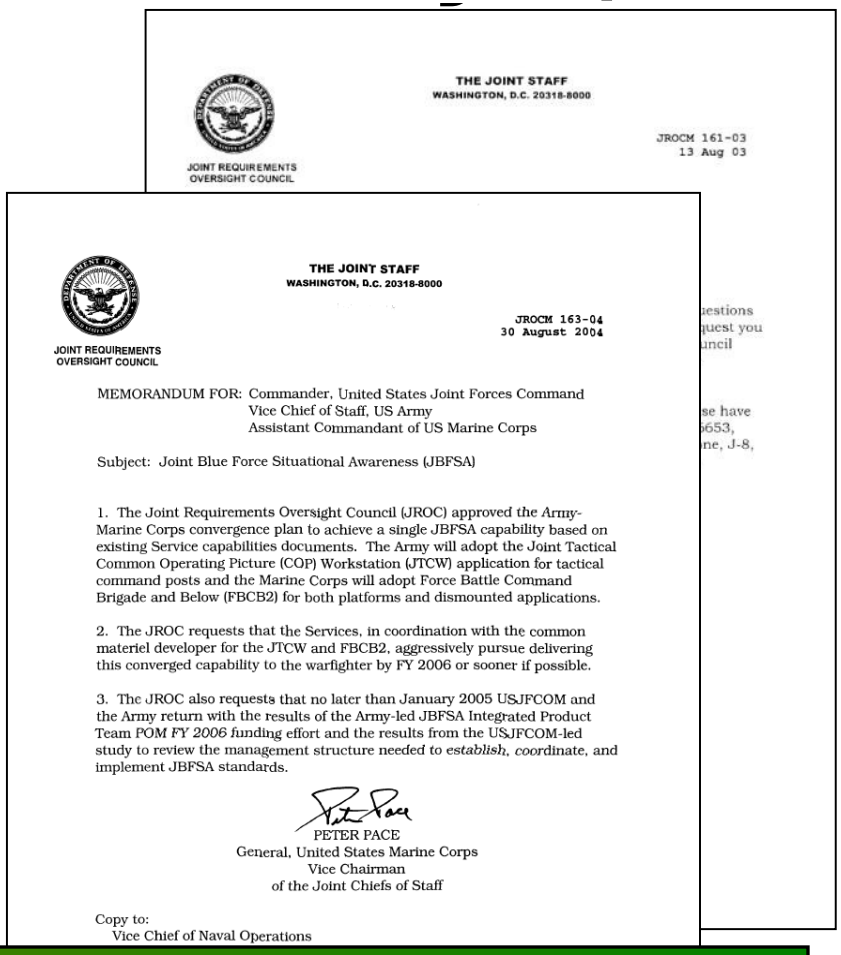
MARCORSYSCOM Activities

- Products and processes in place to assess and improve interoperability and systems engineering.



JROCM 161-03 Background/Histor

- **13 Aug 03 -** JROCM 161-03 issued
  - USMC and Army converge to a single BFT capability:
    - Focus on ground forces for near term.
    - Facilitate interoperability with Air Force, Navy and Coalition by putting Army, Marines and select SOF on one baseline.
    - **Not just BFT – C2 and SA.**
- **28 Jan 04 -** Battalion and Above (BAA) convergence methodology approved by 3-Star AMCB.
- **12 Mar 04 -** USJFCOM has lead for 161-03 Security and URN Issues resolution, at request of Council of Colonels.
- **30 Apr 04 –** Brigade and Below (BAB) convergence methodology approved by 3-Star AMCB.
- **14 Jun 04 –** Joint Capabilities Board endorses/approves USA/USMC BFT Convergence Initiative.
- **30 Aug 04 –** JROC approves USA/USMC Convergence Strategy – JROCM 163-04.
- **01 Dec 04 –** AMCB approves USA/USMC PLI security policy and DOTMLPF impact recommendations.
- **27 Jan 05 –** 2-Star AMCB requests revised BAA/BAB program plans



THE JOINT STAFF
WASHINGTON, D.C. 20318-8000

JOINT REQUIREMENTS OVERSIGHT COUNCIL

JROCM 161-03
13 Aug 03

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JOINT REQUIREMENTS OVERSIGHT COUNCIL

JROCM 163-04
30 August 2004

MEMORANDUM FOR: Commander, United States Joint Forces Command
Vice Chief of Staff, US Army
Assistant Commandant of US Marine Corps

Subject: Joint Blue Force Situational Awareness (JBFSA)

1. The Joint Requirements Oversight Council (JROC) approved the Army-Marine Corps convergence plan to achieve a single JBFSA capability based on existing Service capabilities documents. The Army will adopt the Joint Tactical Common Operating Picture (COP) Workstation (JTCW) application for tactical command posts and the Marine Corps will adopt Force Battle Command Brigade and Below (FBCB2) for both platforms and dismounted applications.

2. The JROC requests that the Services, in coordination with the common materiel developer for the JTCW and FBCB2, aggressively pursue delivering this converged capability to the warfighter by FY 2006 or sooner if possible.

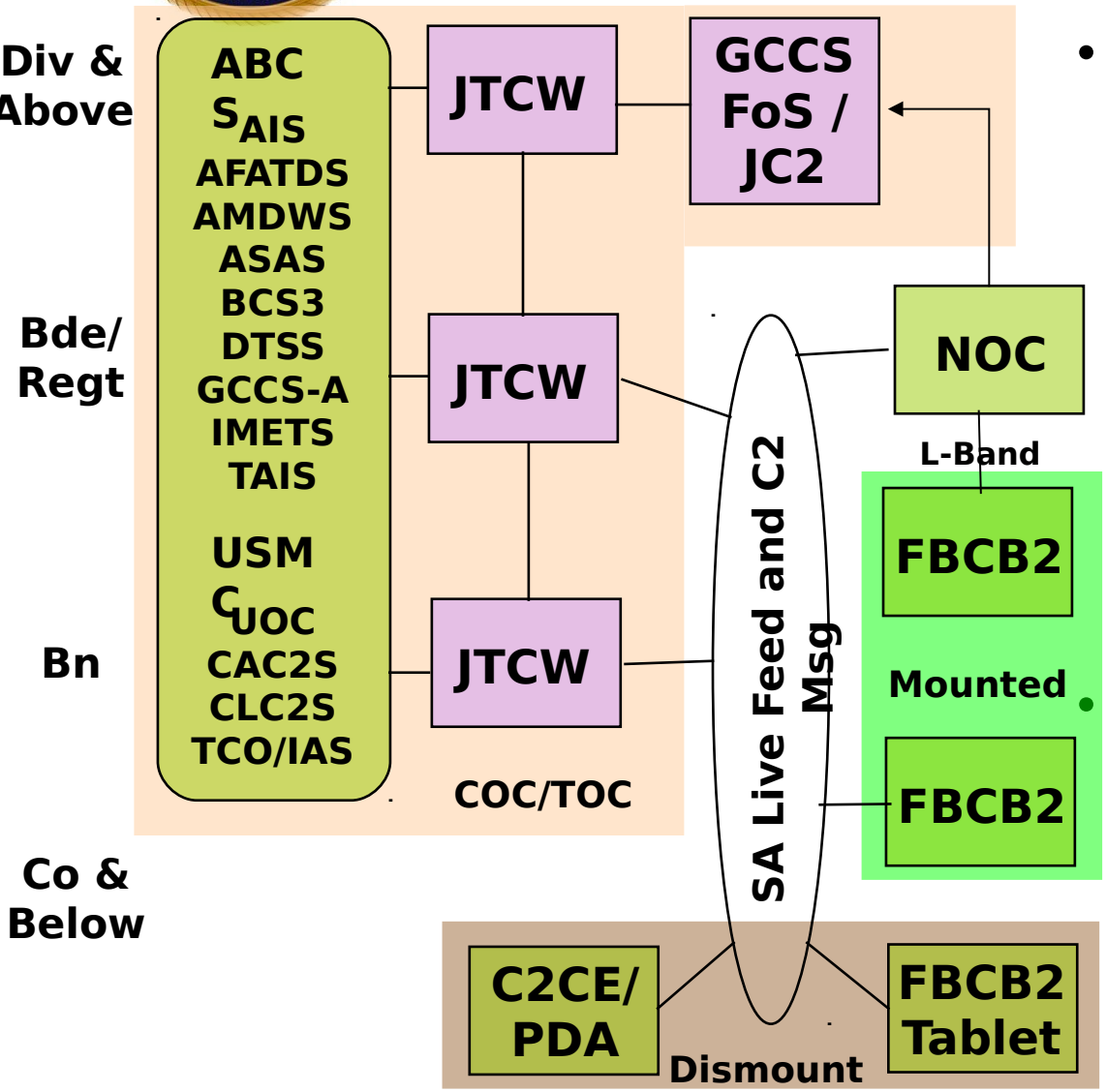
3. The JROC also requests that no later than January 2005 USJFCOM and the Army return with the results of the Army-led JBFSA Integrated Product Team POM *FY 2006* funding effort and the results from the USJFCOM-led study to review the management structure needed to *establish, coordinate*, and implement JBFSA standards.

PETER PACE
General, United States Marine Corps
Vice Chairman
of the Joint Chiefs of Staff

Copy to:
Vice Chief of Naval Operations

USMC lead for BAA/USA lead for BAB/Co-lead for Common Communications Architecture (CCA)

JROCM 161-03 Common Ground C2/SA



- The 3 elements of the JROCM 161-03 Convergence Effort embody a feasible plan ....
  - that capitalizes on a **common communications architecture**
  - to create a **common "platform" SA/C2 system**
  - that is integrated with **common "TOC" joint tactical COP SA/C2 system**

AND...

  - **when combined**, can be extended to provide a **global joint SA service** for all PLI-producing and -consuming systems as a capabilities bridge to JC2

CONDOR Gateway OTH/OTM Networking

The CONDOR Gateway:
Connects Battalion and Below Secure Mobile Networks over over the horizon and on the move

C2 On the Move Network with a Digital Over the Horizon Relay (CONDOR)

Convoy Operations

CONDOR Gateway

Beyond Line of Sight

Small Unit Operation

SINCGARS

Point of Presence Vehicle

High Frequency

CONDOR Gateway

Beyond Line of Sight

Company Sized Operation

Beyond Line of Sight

200+ Miles

Beyond Line of Sight

CONDOR Gatewa

Company Sized Operation

Army - USMC shared C2/SA via Common Ground Tactical Communications Architecture

Common Comms Architecture

- **Common Architectural plan creates a <u>Common C2 Intranet</u> through Commercial Satellite systems**:
  - USA/USMC cooperatively design Hub infrastructure
  - Stationary Nodes (JNN/JECCS) create IP routed Intranet
- **<u>Common C2 OTM Network</u> created through CONDOR**
  - Tactical data transmitted from user to Point of Presence Vehicle which relays this data on to Mobile Wireless Networks
  - CONDOR Gateways within Mobile networks route traffic to Bn and above.
  - .Mobile Wireless Networks move data at Bn and below.
  - BFT connectivity through L-band connected through Intranet.
- **USA and USMC are teaming to create "<u>Cooperative Development Programs</u>"**
  - MOA signed between PEO-C3T and MCSC
  - USA MBCOTM to be co-located with USMC PM COMM

- **<u>USA/USMC Configuration Control Board</u> defines**

Universal Comm Interface Modules (UCIM)

- JTRS is years away – but we need Net-Centric Capabilities Now. UCIM will help.
  - Tailor the Platform to the Mission
  - Program all Radios from a single Control Box
  - Interface and Crossband voice radio nets, Intercom and Telephone, any platform/position
  - Route data internally and externally (Intranet/GIG
  - Dynamically join vehicles to create larger C2 Nodes
  - Access to any loaded application from any user position

UCIM Advantages

- The UCIM controller provides a Universal Control box that uses current equipment to turn a platform into a flexible, robust, rapidly reconfigurable, network converged communications system.

- Cost savings by standardizing training, maintenance and logistics

- Decreases C4ISR platform integration costs, improves C4ISR platform capabilities and provides a transition path from legacy radios to JTRS radios

- Allows the Platform PM to select

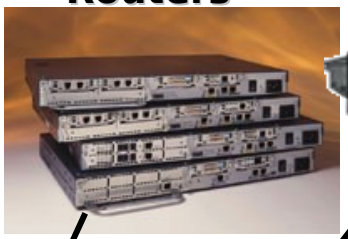
UCIM Components

Headsets/Intercoms

Workstations

Commercial Satellite

Routers



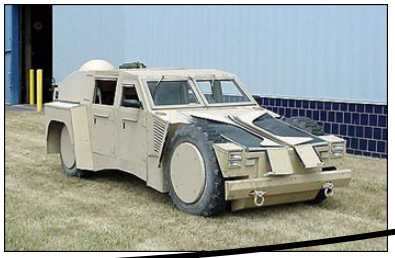
Servers

Switches

Tactical Radios

Network Hubs

The C2 Node is tailored to the Platform through a modular TDN/UCIM Build



Conclusion

- Closing thoughts –
  - Marine Corps is part of the JBMC2 initiative
  - Does not have the resources of the other Services, but are putting its fair share toward attaining Joint warfighting capability
- Thank you for the opportunity to serve on this panel today.

Questions?

Backup Slides

Mission

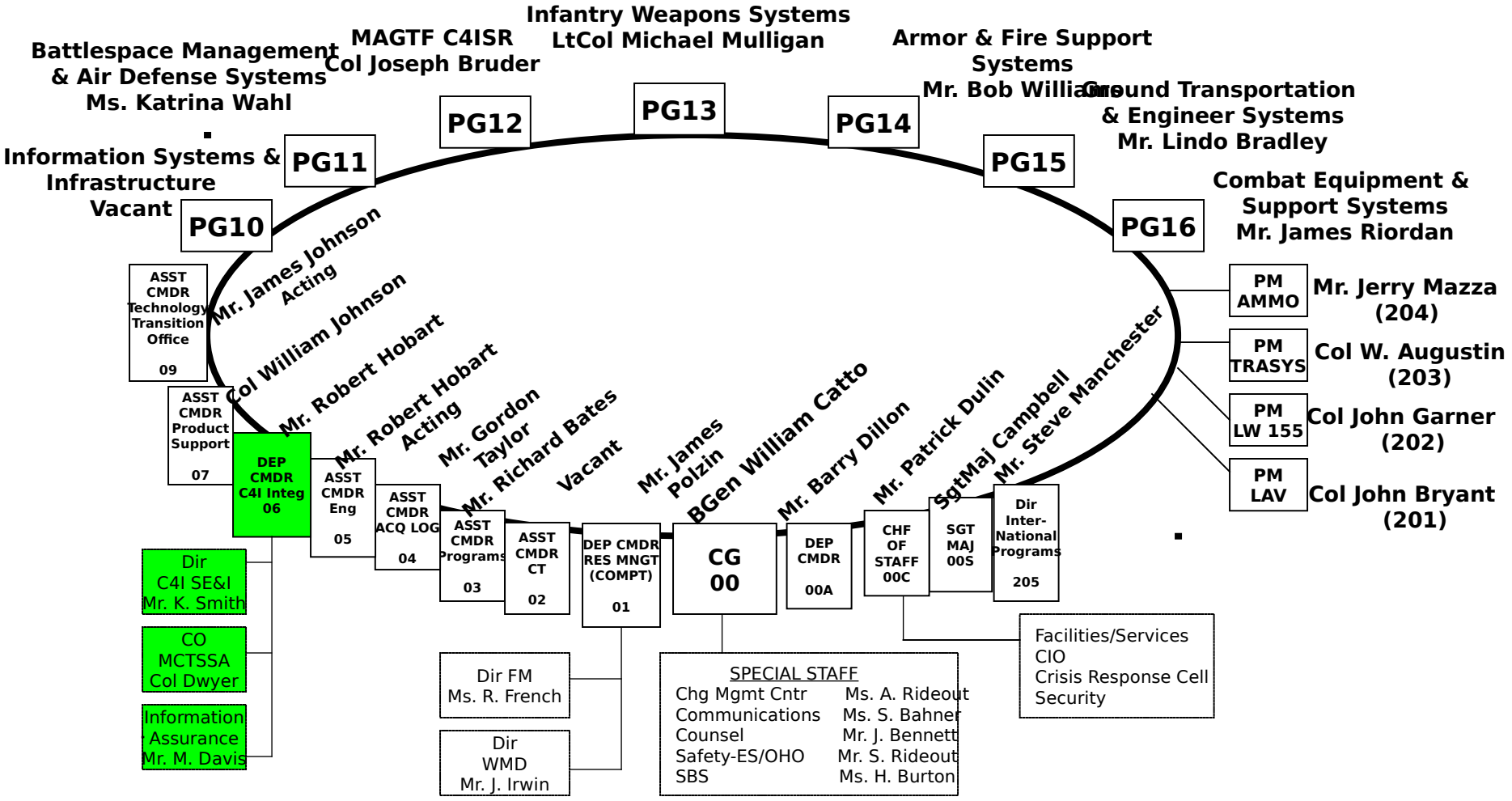
- MARCORSYSCOM Mission –

  To serve as the Commandant's principal agent for equipping the Operating Forces to accomplish their warfighting mission.

- C4I Integration Mission –

  To ensure delivery and sustainment of a superior integrated Enterprise C4ISR capability to the Operating Forces and supporting establishment.

MARCORSYSCOM Organization



Recommended Acquisition Strategy for UCIM

- To Acquire Standard Components for all Platforms and Reduce NRE- Risk to Platform PMs
- Issue an RFP for a Requirements Based Contract.
  - Based on platform needs.
  - SE&I maintain configuration control.
  - PM Comm will develop and test – reducing Platform integration risk.
  - Platform PMs will buy required modules from the PM Comm-managed catalog.
  - Platform PMs can request additional capabilities or items to be added to the UCIM catalog as required

The vision for the future Marine Corps C4 capabilities includes collaborative initiatives to ensure the net-centric environment of the future becomes a reality. We will focus on the concepts of a common networking approach, common services approach, and a common computing environment that reduces operator configuration and improves information sharing capabilities. To that end, our IT enterprise must not only be internally consistent and interoperable, it must also be interoperable with the DOD. As such, the primary focus in acquiring and managing IT capabilities is ensuring programs conform to DoD, joint warfighting, and naval architectures. We will ensure that our MCEN is leveraging the IT capabilities contained in these architectures.

The GIG is the DoD framework for achieving net-centric operations and warfare (NCOW). The GIG refers to the collection of processes, personnel, systems, networks, technologies, and standards needed to guide transformation to a net-centric environment. The GIG supports warfighting domains and business domains through an enterprise infrastructure consisting of common computing capabilities and IT services. The GIG is DoD's enterprise architecture that establishes the standards for the Components, Services, and Agencies. The key components of the GIG include Global Information Grid-Bandwidth Expansion, Transformational Communications Architecture, Joint Tactical Radio System, Net-Centric Enterprise Services and Next–Generation Internet Protocol.

Global Information Grid–Bandwidth Expansion (GIG-BE)

The GIG-BE effort will provide large-capacity optical and fiber service to the enterprise, connecting intelligence, surveillance, and reconnaissance (ISR) capabilities as well as combatant and component commands to satellite facilities. This effort will ensure that increased bandwidth is available and scalable in support of future information exchange requirements.

Transformational Communication Architecture (TCA)

The TCA will transform SATCOM from a set of stand-alone systems specifically developed for particular users to an integrated, network centric SATCOM system architecture under the oversight of the Transformational Communication Office (TCO). The Advanced Extremely High Frequency (AEHF) satellite system, the Advanced Polar Satellite (APS) and Transformational Satellite (TSAT) will be cross-linked to form an integrated network-centric system-of-systems for wideband and protected users, significantly increasing SATCOM's capacity and utility. High data rate terminals will link platforms and satellites. Future USMC wideband SATCOM procurements will be integrated into TCA. TCA facilitates embedding terminals into platforms, command posts, and other C2 nodes.

Joint Tactical Radio System (JTRS)

The JTRS family of radios will be interoperable with legacy communication systems and capable of growth of new requirements and technologies JTRS forms the tactical extension of the Transformational communication Architecture (TCA) to access the services of the GIG, and together form the vision for DoD communication in net-centric warfare. JTRS is a software programmable radio being developed in accordance with the DoD-wide standard software communications architecture. Among new capabilities, the JTRS wideband networking waveform will provide wideband IP connectivity to the last tactical mile. Through software, and in addition to the wideband networking waveform. JTRS is backwards compatible with the inclusion of 32 legacy waveforms.

Next Generation Internet Protocol (IPv6)

IPv6 is the way of the future Internet Protocol that will enable DoD to achieve net-centric transformation. The IPv6 network will retain backward compatibility with IPv4, allowing our current network devices and equipment to co-exist. Issues of training, doctrine and IA will necessitate our moving to IPv6 in a methodical and deliberate fashion to take advantage of the much-needed features of IPv6 and to ensure the integrity of our enterprise.

Mobile ad hoc networking will depend heavily on IPv6. Other reasons for the move include the need for larger addressing space (128-bit vs. 32-bit address), direct-path mobile IP addressing, and serverless auto-configuration, as well as improvements in quality of service (QoS), handling, and security. Many of the IPv6 features, including those mentioned above, are critical for the realization of a net-centric environment.

The use of IP as the common standard will promote convergence of our networks (voice, video, and data) and extend our voice and video capabilities. As technology matures, we will leverage Voice over IP to provide a decreased footprint, increased ease of use, greater flexibility, and improved network efficiency.

Information Assurance (IA)

The IA Branch is dedicated to developing and institutionalizing a well-coordinated and robust IA policy program for the U.S. Marine Corps.

The IA Branch establishes and executes an overarching process for coordinating IA policies throughout the Marine Corps. It synchronizes IA initiatives, building on synergistic relationships of those initiatives, and strives to minimize redundant IA efforts. The Head of the IA Branch is the Marine Corps Senior IA Manager (MCSIAM), as required by Federal Information Security Management Act (FISMA) , and is responsible for coordinating and overseeing IA policy efforts across the Marine Corps. The MCSIAM is not designed to execute the IA policy efforts of other commands, but rather to maintain oversight and visibility of the holistic enterprise view of IA planning, identify parallel and contradictory efforts, and provide commands with insight and guidance for their IA plans.

Marine Corps Enterprise Network (MCEN)

The Marine Corps Enterprise Network (MCEN) is the Marine Corps component of FORCEnet and the Global Information Grid (GIG). MCEN is our enterprise framework for IT. The MCEN supports all information exchange requirements for Marine warfighters and our Supporting Establishment. It is our end-to-end IT capability and infrastructure spanning both our warfighting and business domains. MCEN, as part of the broader FORCEnet architecture, connects the garrison, maritime, and expeditionary infrastructures vital for sharing information with all Marines. MCEN is the union of information assets supported by the Navy-Marine Corps Intranet and the information assets of the Expeditionary Network. Underlying both NMCI and eXNET is a critical enabling initiative for the MCEN supporting net-centric transformation — Marine Corps Enterprise Information Technology Services (MCEITS).

Net-Centric Enterprise Services (NCES)

NCES is another key component program of the GIG to help migrate toward a net-centric operating environment. NCES provides the enabling core enterprise services of the GIG that cut across and support user information needs within the Business, Warfighting, and Intelligence Domains. NCES consists of nine core enterprise services (Application, Discovery, User Assistant, Collaboration, Storage, Mediation, Messaging, Information Assurance/Security, and Enterprise Services Management). NCES aims to support an integrated, interoperable, and networked joint force that will:

- Ensure common shared situational awareness
- Provide fused, precise, and actionable intelligence
- Support coherent distributed and dispersed operations, including forced entry into anti- access or area-denial environments
- Ensure decision superiority enabling more agile, more lethal, and more survivable joint operations

The NCES program will enable the end user to execute an intelligent pull of mission-tailored information from anywhere within the network. NCES will provide DoD components with web-based, networked applications to bridge communities of interest such as Intel, Finance, and C2, thus enabling ubiquitous access to reliable, decision-quality information. NCES will be implemented in the Marine Corps through Marine Corps Enterprise IT Services (MCEITS) construct.

Marine Corps Enterprise IT Services (MCEITS)

MCEITS is an initiative designed to align our IT resources (manpower, skill sets, hardware, software, facilities, programs, and budget) with the objective of providing a core set of sharable IT services for all users and enhancing information access/management throughout the Marine Corps.

MCEITS will establish the enterprise-level framework of technologies, processes, standards, and governance to develop, implement, operate, and maintain current and new generations of critical IT to support current and planned warfighting and business support capabilities for reliable, secure, sophisticated computing and networks.

The MCEITS framework consists of:

- A family of centrally managed and funded services
- User services for application hosting, data centers, and network management
- Reusable application modules supporting DoD’s GIG Enterprise Services for common and sophisticated functions like knowledge discovery, metadata queries, and messaging
- Regional IT centers for centralized management of core services with skilled operations staffs
- Data management services for an Enterprise Shared Data Environment (ESDE)
- User interface and application integration services for an enterprise portal
- Policy and guidance for technology systems and operations and business processes

By realigning and centralizing the management of our IT resources, MCEITS establishes a new IT environment that shifts the burden of IT management away from the operating forces, thus allowing them to focus on core competencies and warfighting missions. MCEITS will:

- Enable rapid access to authoritative data sources and net-centric enterprise services
- Reduce duplicative infrastructure investments
- Align and maximize the capability of existing IT resources
- Facilitate rapid delivery of IT capabilities to the Operating Forces
- Achieve DoD/DoN strategic goals and enable migration to a net-centric environment

MCEITS is a unifying framework, which encompasses both the services to be delivered and the infrastructure and systems that must be deployed to enable delivery of those services.

Importantly, MCEITS represents the USMC migration strategy to NCW and implementation of GIG strategic plans and technological guidance.

In order to ensure our future success we need to prepare our Marines today for the dynamic network–centric environment of tomorrow. Initiatives such as CoNDOR, the C4 Training and Education Center of Excellence, transformation of our C4 organizational structure and our partnership with industry all play critical roles in the road ahead.

C2 on-the-Move Network Digital Over-the-Horizon Relay (CoNDOR) Capability Set

The CoNDOR capability set will close the digital divide by enabling our operating forces to use legacy radios configured to replicate the JTRS/TCA environment. This capability will provide on-the-move (OTM), over-the-horizon (OTH) data connectivity to all ground maneuver units. It will also allow for the development of tactics, techniques, and procedures required to build a JTRS network.

C4 Training and Education Center of Excellence (C4 TECOE)

The C4 TECOE is chartered to serve as the focus for C4 training and education issues within the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities process in order to meet MAGTF C4 training requirements. The C4 TECOE will identify, track, and incorporate into the training and education continuum C4 training and education requirements and opportunities as identified by new requirements, technology, equipment, organizational changes, or doctrine.

Transformation of C4 Manpower, Equipment, and Structure to support the 21st Century Marine Corps

To achieve Decision Superiority and to meet the requirements of 21st century Expeditionary Maneuver Warfare (EMW), coalition interoperability, and FORCEnet, the Marine Corps must continue to enhance its C4 capabilities through information technology insertion, organizational refinement, and C4 personnel readiness improvements. However, the Marine Corps current C4 manpower, equipment, and structure strategy is based on technology that does not fully support and align with current C4 systems, procedures, and Marine Corps Strategy 21 goals. Therefore, necessary changes to the C4 manpower, equipment, and structure strategy must be identified in order to ensure that we can take full advantage of our C4 systems while meeting requirements contained in emerging operational concepts (EMW, STOM, etc).

IT Civilian Marines

An integral part of the Marine Corps “Total Force” team is our Civilian Marines, who are also an integral part of our C4 community. As a part of our manpower transformation, the Senior Executives of the Marine Corps have created “Communities of Interest” (COI) to expand and enhance the professional development opportunities and guidance available to our civilians. The “Information Technology Management,” or “ITM” COI, has been chartered to provide enhanced career development to more than one thousand Civilian Marines in ITM occupational fields at thirty-seven activities worldwide. The ITM COI seeks to provide its civilians with the career development opportunities such as PME, training, rotational assignments, etc... similar to the tangible and intangible benefits realized by their uniformed counterparts. C4 is the leader of the ITM COI.

As a part of the ITM COI, a global network of senior representatives has been established to represent the interests of all ITM Civilian Marines. This network serves also as an expert working group for various issues affecting the Civilian Marine workforce.

Future goals of the ITM COI include the following:

- Inventorying the current skill sets of our ITM-aligned Civilian Marines, including their levels of proficiency in each critical skill
- Completing a set of “Career Progression Pyramids” for each ITM-aligned occupational series
- Developing a leadership program for senior COI members
- Providing civilians with valuable opportunities for Joint experience, including the USMC-USAF Information Technology and Communications Management Exchange Program
- Enhancing civilian participation in Schools/PME opportunities, such as obtaining seats for civilians at the Expeditionary Warfare School, Command and Staff College, and the Advanced Communications Information Systems course.
- Developing a Career Mobility Opportunity Program that identifies available job opportunities and assists Civilian Marines with the process of applying for them
- Helping Civilian Marines to understand the post-NMCI USMC IT organizational and services environment, its impact on them, and opportunities for meeting evolving USMC mission requirements

Industry Partnerships

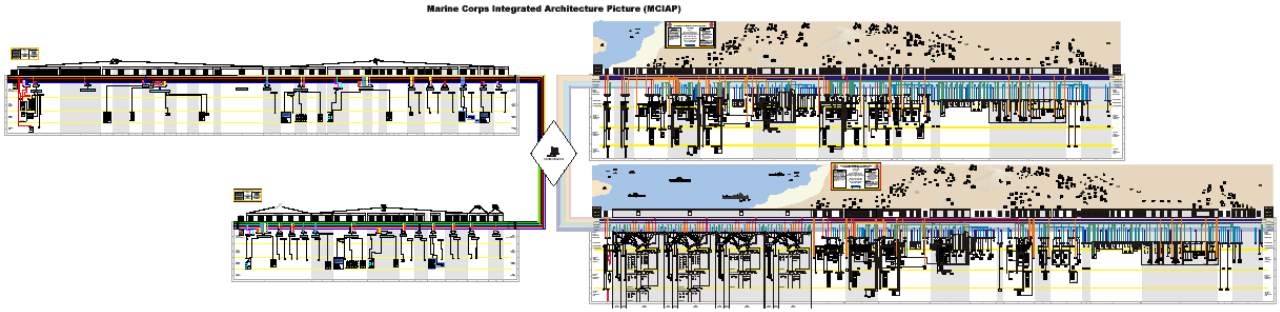
To execute this evolutionary transformation efficiently, we are working closely with our industry partners to identify and employ proven technology.

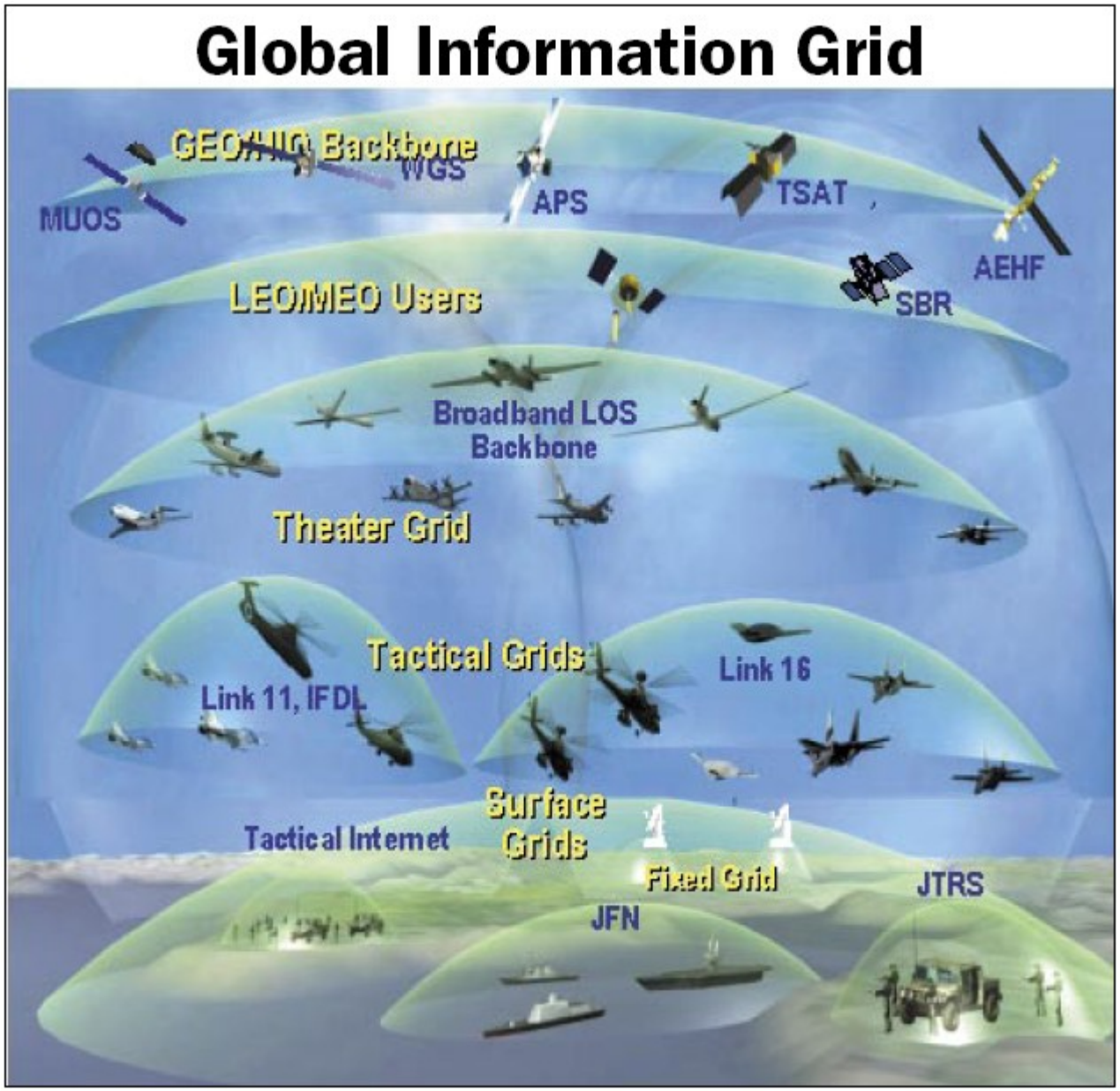
For our commercial off-the-shelf (COTS) acquisition strategy, we must make hard choices on “state of the shelf” versus “state of the art”; we must also decide whether to purchase or lease network components. The choices vary, depending on the individual systems to be fielded and the fielding requirements mandated.

We are employing innovative acquisition strategies to overcome the technology obsolescence created by today’s rapid advancements. Leveraging industry expertise, especially in the areas of information and knowledge management, are key elements of our acquisition strategy.

MARCORSYSCOM Activities

- MOU between HQMC C4/CIO, MCCDC and MARCORSYSCOM delineated Roles and Responsibilities.
- Operational capabilities drive architecture, subsequent system development, and testing.
- MCIAP depicts systems architecture




Global Information Grid
GEO/HIO Backbone
WGS
MUOS
APS
TSAT
AEHF
LEO/MEO Users
SBR
Broadband LOS
Backbone
Theater Grid
Tactical Grids
Link 16
Link 11, IFDL
Surface
Grids
Tactical Internet
Fixed Grid
JTRS
JFN